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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,383	04/15/2004	Hiromi Matsusaka	P25217	6631
7055 7590 07/12/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER LU, ZHIYU	
			ART UNIT 2618	PAPER NUMBER
			NOTIFICATION DATE 07/12/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
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## Office Action Summary

Application No.

10/824,383

Applicant(s)

MATSUSAKA, HIROMI

Examiner

Zhiyu Lu

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see REMARKS, filed 06/13/2007, with respect to the rejection(s) of claim(s) 2-10 under 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lindoff (US Patent#6373888) and Lindoff et al. (US Patent#6463107).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Lindoff et al. (US Patent#6463107).

Regarding claim 2, Lindoff teaches a radio reception apparatus comprising:

a receiver (401 of Fig. 4) configured to receive a signal on a per time unit basis (inherent in TDMA systems, where processing is on a per time unit basis ), the received signal including a known signal pattern (402 of Fig. 4);

an adjuster (405 and 407 of Fig. 4) configured to adjust a filter for filtering the received signal using the known signal pattern on a per time unit basis (406 of Fig. 4); and

Art Unit: 2618

a canceller (406 of Fig. 4) configured to cancel an interference component included in the time unit using the adjusted filter (3 of Fig. 2);

wherein the adjust comprises:

a tap coefficient controller configured to control tap coefficients to set the filter according to the estimated channel structure (column 5 lines 50-51).

But, Lindoff does not expressly disclose a modulation scheme determiner configured to process likelihoods calculated for individual modulation schemes and to determine the modulation using the known signal pattern; and control tap coefficients to set the filter according to the determined modulation scheme.

Lindoff et al. teach a modulation scheme determiner configured to process likelihoods calculated for individual modulation schemes and to determine the modulation using the known signal pattern (column 3 lines 3-62); and control tap coefficients to set the filter according to the determined modulation scheme (column 4 lines 41-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate modulation determiner and taking determined modulation type into tap calculation taught by Lindoff et al. into the radio reception apparatus of Lindoff, in order to provide efficient information for calculating equalization setting.

Regarding claim 6, Lindoff and Lindoff et al. teach the limitation of claim 2.

Lindoff teaches the canceller cancels adjacent channel inter-symbol interference (column 1 lines 16-27, column 4 lines 28-33).

Art Unit: 2618

Regarding claim 7, Lindoff and Lindoff et al. teach the limitation of claim 2.

It would have been obvious to one of ordinary skill in the art to recognize Lindoff teaches wherein the adjuster adjusts a filter characteristic of the filter such that a combined characteristic of said filter with a baseband filter at a communicating partner station has a Nyquist characteristic because Nyquist characteristic is fundamental for signal reconstruction, which is essentially needed in sampling and signal processing.

Regarding claim 8, Lindoff and Lindoff et al. teach the limitation of claim 2.

Lindoff teaches a communication terminal apparatus including the radio reception apparatus (column 4 lines 11-14).

Regarding claim 9, Lindoff and Lindoff et al. teach the limitation of claim 2.

It would have been obvious to one of ordinary skill in the art to incorporate the radio reception apparatus in a base station apparatus (column 3 lines 61-64) for interference cancellation on received signals

Regarding claim 10, Lindoff and Lindoff et al. teach a reception filtering method as explained in the response to claim 2 above.

Art Unit: 2618

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Lindoff et al. (US Patent#6463107) and Jayaraman et al. (US2003/0087622).

Regarding claim 3, Lindoff and Lindoff et al. teach a radio reception apparatus as explained in response to claim 2 above.

But, Lindoff and Lindoff et al. do not expressly disclose a frequency converter configured to perform a frequency analysis of the received signal; the tap coefficients are set according to a detection result of adjacent channel interference.

Jayaraman et al. teach a frequency converter configured to perform frequency analysis of the received signal before processing (paragraph 0028); and using detected adjacent channel interference result to set filter, which includes setting tap coefficients (Figs. 2-5, paragraphs 0011-0013).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using detected adjacent channel interference result to set filter parameters taught by Jayaraman et al. into the radio reception apparatus of Lindoff and Lindoff et al., in order to provide another parameters for calculate more accurate equalization setting.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Lindoff et al. (US Patent#6463107) and Casas et al. (US Patent#7027500).

Art Unit: 2618

Regarding claim 4, Lindoff and Lindoff et al. teach a radio reception apparatus as explained in response to claim 2 above, where Lindoff teaches a transmission path characteristic estimator configured to estimate a transmission path characteristic (channel structure) using the known signal pattern included in the received signal from which interference is canceled (405 of Fig. 4). But, Lindoff and Lindoff et al. do not expressly disclose an error measurer configured to measure an error of the received signal that occurs due to a transmission path characteristic by comparing the known signal pattern included in the received signal with a known signal pattern obtained by the transmission path characteristic; and a tap coefficient controller configured to control tap coefficients to set the filter based on the measured error and a reception level of the received signal.

Casas et al. teach a transmission path characteristic estimator configured to estimate a transmission path characteristic using the known signal pattern included in the received signal from which interference is canceled; an error measurer configured to measure an error of the received signal that occurs due to a transmission path characteristic by comparing the known signal pattern included in the received signal with a known signal pattern obtained by the transmission path characteristic; and a tap coefficient controller configured to control tap coefficients to set the filter based on the measured error and a reception level of the received signal (Fig. 1, column 2 line 53 to column 4 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate setting tap coefficients based on results from measured error and reception level taught by Casas et al. into the radio reception apparatus of Lindoff and Lindoff et al., in order to provide more data in setting filter parameters in distortion cancellation.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US Patent#6373888) in view of Lindoff et al. (US Patent#6463107) and Perets (US2003/0003889).

Regarding claim 5, Lindoff and Lindoff et al. teach the limitation of claim 2.

But, Lindoff and Lindoff et al. do not expressly disclose the canceller comprises a plurality of filters having different filter characteristics; and adjuster comprises a filter selector configured to select one of the plurality filters according to the determined modulation scheme.

Perets teaches one of a plurality of filters having different filter characteristics (Fig. 2) is selected according to an adjuster (Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the selectable filter of Perets into the radio reception apparatus of Lindoff and Lindoff et al., in order to provide filter selections for suitable filtering.

### *Conclusion*

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhiyu Lu whose telephone number is (571) 272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2618

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Zhiyu Lu  
June 29, 2007

ZL

  
NAY MAUNG  
SUPERVISORY PATENT EXAMINER